TYPE 3ACP-A CATHODE-RAY TUBES

The Du Mont Type 3ACP-A is a flat face, single beam, electrostatic deflection and focus Cathode-ray Tube. A combination of post-acceleration and a very efficient gun design results in high light output, high deflection sensitivity and small spot size. The deflection structure is designed so as to improve the deflection accuracy and is electrostatically shielded where possible in order to minimize interaction. The electron gun is so designed as to require no appreciable focus electrode current. The electrode connections are arranged to give maximum insulation yet retain simplicity of connection. The 3ACP-A is one of the line of Du Mont tight-tolerance cathode-ray tubes.

GENERAL CHARACTERISTICS

Electrical Data

Focusing Method	Electrostatic
Deflecting Method	Electrostatic
Direct Interelectrode Capacitances - Maximum	
Cathode to all	4.2 $\mu\mu$f
Grid No. 1 to all	5.5 $\mu\mu$f
D1 to D2	2.1 $\mu\mu$f
D3 to D4	1.5 $\mu\mu$f
D1 to all	5.8 $\mu\mu$f
D2 to all	5.8 $\mu\mu$f
D3 to all	4.5 $\mu\mu$f
D4 to all	4.5 $\mu\mu$f

Optical Data

Phosphor Number	1	2	7	11
Fluorescent Color	Green	Green	Blue	Blue
Phosphorescent Color	——	Green	Yellow	——
Persistence	Medium	Long	Long	Short

Mechanical Data

Overall Length	10 ± 3/16 Inches
Greatest Diameter of Bulb	3 ± 1/16 Inches
Minimum Useful Screen Diameter	2.68 Inches
Bulb Number	J24-V1
Bulb Contact — Recessed Small Ball Cap	J1-22
Base — Medium Shell Diheptal, 12 Pin	B12-37
Basing	14J
Base Alignment	
D1D2 trace aligns with Pin No. 5 and tube axis	0 ± 10 Degrees
Positive voltage on D1 deflects beam approximately toward Base Pin No. 5	
Positive voltage on D3 deflects beam approximately toward Base Pin No. 2	
Bulb Contact Alignment	
J1-22 contact aligns with D1D2 trace	0 ± 10 Degrees
J1-22 contact on same side as Pin No. 5	
Trace Alignment	
Angle between D3D4 and D1D2 traces	90 ± 1 Degrees

MAXIMUM RATINGS (Design Center Value)

Heater Voltage	6.3 Volts
Heater Current at 6.3 Volts	0.6 ± 10% Ampere
Post-Accelerator Voltage	6000 Max. Volts D-C
Accelerator Voltage	2000 Max. Volts D-C
Ratio Post-Accelerator Voltage to Accelerator Voltage (Note 1)	3.0
Accelerator Input (Avg.)	6.0 Max. Watts
Focusing Electrode Voltage	1500 Max. Volts D-C
Grid No. 1 Voltage	
Negative Bias Value	200 Max. Volts D-C
Positive Bias Value	0 Max. Volts D-C
Positive Peak Value	0 Max. Volts
Peak Heater-Cathode Voltage	
Heater negative with respect to cathode	180 Max. Volts
Heater positive with respect to cathode	180 Max. Volts
Peak Voltage between Accelerator and any Deflection Electrode	550 Max. Volts

TYPICAL OPERATING CONDITIONS

Post-Accelerator Voltage	4000 Volts
Accelerator Voltage	2000 Volts
Focusing Electrode Voltage	390 to 550 Volts
Grid No. 1 Voltage (Note 2)	—45 to —75 Volts
Anode No. 3 Current (Note 3)	500 Min. μADC
Cathode Current (Note 4)	125 Max. μADC
Cathode Current (Note 5)	600 Max. μADC
Deflection Factors:	
D1 and D2	175 to 205 Volts D-C per Inch
D3 and D4	138 to 158 Volts D-C per Inch
Deflection Factor Uniformity (Note 6)	2% Max.
Pattern Distortion (Note 7)	2% Max.
Modulation (Note 8)	21 Max. Volts D-C
Modulation (Note 9)	45 Max. Volts D-C
Line Width "A" (Note 10)	0.016 Max. Inches
Line Width "A" (Note 9)	0.028 Max. Inches
Light Output (Note 11)	
P1	80 Foot Lamberts Min.
P11	35 Foot Lamberts Min.
Focusing Electrode Current for any operating condition	—15 to +5 μA
Spot Position (focused and undeflected) (Note 12)	within a 3/16 Inch radius circle

For Accelerator Voltage not shown in the preceding table, the following can be used as a guide:

Focusing Electrode Voltage	19.5% to 27.5% of Accelerator Volts
Grid No. 1 Voltage	2.2% to 3.8% of Accelerator Volts
Ratio Post-Accelerator to Accelerator Voltage	1.0
D1 and D2	71 to 81.5 Volts D-C per Inch per Kilovolt of Accelerator
D3 and D4	55 to 63.5 Volts D-C per Inch per Kilovolt of Accelerator
Ratio Post-Accelerator to Accelerator Voltage	2.0
D1 and D2	87.5 to 102.5 Volts D-C per Inch per Kilovolt of Accelerator
D3 and D4	69 to 79 Volts D-C per Inch per Kilovolt of Accelerator

MAXIMUM CIRCUIT VALUES

Grid No. 1 Circuit Resistance	1.5 Max. Megohms
Resistance in any Deflecting Electrode Circuit (Note 13)	1.0 Max. Megohms

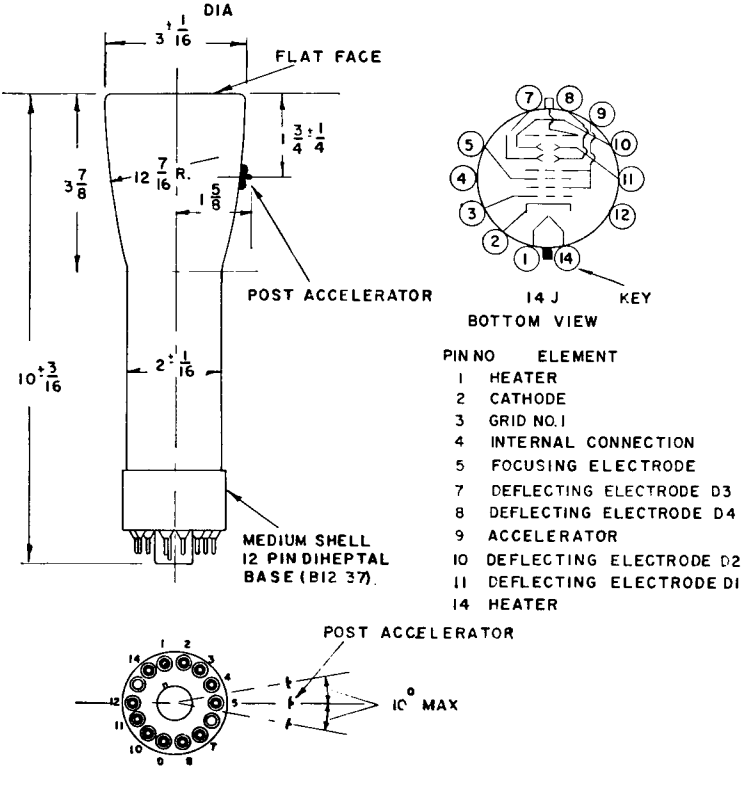
NOTES

1. This tube is designed for optimum performance when operating at an Eb3/Eb2 ratio of 2.0. Operation at other ratios of Eb3/Eb2 may result in changes in deflection uniformity and pattern distortion.
2. Visual extinction of undeflected focused spot.
3. For Ec1 = 0 VDC.
4. For an Ib3 of 50 μADC.
5. For an Ib3 of 200 μADC.
6. As per MIL-E-1B specifications.
7. All portions of a raster pattern, adjusted so its widest points just touch the sides of a 1.938 inch square, will fall within the area bounded by the 1.938 inch square and an inscribed 1.862 inch square.
8. For an Ib3 of 25 μADC measured in accordance with MIL-E-1 specifications.
9. For an Ib3 of 200 μADC measured in accordance with MIL-E-1 specifications.

10. For an Ib3 of 50 μADC measured in accordance with MIL-E-1 specifications.
11. For an Ib3 of 100 μADC measured in accordance with MIL-E-1 specifications using a raster size of $1\frac{7}{8}$ x $1\frac{7}{8}$ inches. The P11 phosphor is measured with a photronic cell without eye correction.
12. Centered with respect to the tube face and with the tube shielded. Connect free deflecting electrodes to accelerator.
13. It is recommended that the deflecting-electrode circuit resistance be approximately equal. Higher resistance values up to five megohms may be used for low beam current operation.

TYPE 3ACP-

2.68 MIN. SCREEN



TYPE 3ACP-
AVERAGE CHARACTERISTICS